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Occupational dermatoses during the Covid-19 pandemic: a multicentre audit in the UK and Ireland

Dear Editor,

During the Covid-19 pandemic, with the increased need for donning personal protective equipment (PPE) and frequent handwashing, we have noted growing reports from at home and abroad of high rates of irritant dermatitis in frontline healthcare workers (HCWs). In China, where the SARS Cov-2 virus was first reported, up to 97% of frontline HCWs reported skin changes related to new infection control practices.^{1,2} A recent study of 146 HCWs from Manchester and London diagnosed irritant contact dermatitis (ICD) in 97.1%, with high rates of pressure-related facial dermatitis from masks and goggles.³

The British Society of Cutaneous Allergy has conducted the first UK-wide prospective audit of occupational dermatoses in HCWs during the Covid-19 pandemic. Eleven centres in the UK and Ireland set up dedicated occupational skin disease clinics to treat PPE-related dermatoses, collecting data from 337 self-referred HCWs between 1st May and 31st July 2020.

The presenting dermatosis was occupational in 315 (93%). The majority of HCWs (n=210; 62%) were nurses and healthcare assistants, disciplines with dominant patient-facing contact that require frequent handwashing and PPE wear. The commonest diagnosis was ICD (n=199, 59%). A history of atopic eczema was seen in 137 (41%), in comparison with an estimate in the UK adult population of 8.3%, supporting previous studies showing that atopics are more likely to present with healthcare-related occupational dermatitis.^{4,5}

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Fifty-six (17%) presented with acne or rosacea (45 acne, 11 rosacea); all wore a face mask. Workers with a previous history of acne or rosacea appeared especially prone to an exacerbation: 36 of 65 (55%) with previous facial skin problems had acne or rosacea versus 20 of 100 (20%) with no such history (Chi-square test; χ^2 (1 + 1 degree of freedom, 234) = 21.9994; $p < 0.00001$). There was no significant association with mask type. It is likely that the occlusive nature of all masks provides a warm, moist environment which traps saliva, bacteria and sebum, worsening or triggering symptoms.⁶ To date, preventive measures for mask-related acne or rosacea have not been demonstrated, though standard treatments such as oral tetracyclines may be beneficial.

Eleven HCWs (3%) reported facial pressure injury. This was associated with the type of mask worn, being present in four of 26 wearing respirators (15%) versus one of 208 wearing a fluid-resistant surgical mask (0.5%) (Chi-square test; χ^2 (1 + 1 degree of freedom, 234) = 24.5496; $p < 0.00001$). This observed relationship is likely due to increased occlusion or pressure from heavier, tighter-fitting PPE.

Fifty-one (15%) required time off work due to skin disease, losing a total of 468.5 working days across all sites. The mean number of handwashes with soap per day in those needing time off was 23.6 (median 20, IQR 12-30). Each handwash per shift increased the expected amount of time off by 0.014 days ($p = 0.43$, 95% CI = [-0.021-0.050]). Each use of alcohol gel per shift reduced the expected number of days off by 0.03 ($p = 0.029$; 95% CI = [0.003,0.056]). Use of soap or detergent and water disrupts the skin barrier, particularly with inadequate rinsing or drying, or with immediate application of gloves.^{4,7} While alcohol can dissolve the protective lipid layer in the stratum corneum, previous studies have shown that alcohol-based hand cleaning products are better tolerated than detergent products.^{7,8} However, it is acknowledged that due to the stinging effect of alcohol on damaged skin, people with severe dermatitis may avoid it, creating a false inverse association with time off.

The mean number of hours of PPE wear per shift was 7.1 (median 8; IQR 4.5-10). We did not find any significant association between duration of PPE wear and time required off work. However, longer PPE wear was related to the incidence of pressure injuries: 10 of the 11 patients with pressure injury wore their PPE for five hours or longer per shift (91%).

Our data support reports of increased cutaneous morbidity in HCWs during the Covid-19 pandemic, and identify trends which may aid preventive strategies in workforce planning and skin protection measures. Predominantly patient-facing roles and past history of atopic eczema or acne are prevalent in HCWs requesting dermatology assessment, respirator wear is associated with facial pressure injury, and all mask wear may exacerbate or precipitate acne. The high incidence of ICD is unsurprising; it is a well-recognised manifestation of increased handwashing with soap, a particularly important skin hygiene measure currently.

Due to the significant number of working days lost to occupational dermatoses, our findings support the need to identify and mitigate predisposing factors to skin injury through close team-working between Dermatology and Occupational Health.

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Table 1: Diagnoses of self-referred patients to Occupational Dermatology Clinics in the UK and Ireland during the pandemic*

DIAGNOSIS	n=	%
Irritant contact dermatitis	199	59%
Acne**	56	17%
Atopic eczema	42	12%
Allergic contact dermatitis	22	7%
Facial pressure injury	11	3%
Urticaria	11	3%
Other hand/foot eczema	8	2%
Psoriasis	7	2%
Folliculitis	6	2%
Pompholyx hand eczema	6	2%
Type 1 allergy	5	1%
Dry skin	4	1%
Other endogenous dermatosis	3	1%
Seborrhoeic dermatitis	3	1%
Other***	15	4%

*60 patients had 2 diagnoses, so are represented twice in this table; 397 diagnoses in 337 patients

**encompassing 45 patients with acne vulgaris (13.4%) and 11 with rosacea (3.3%)

***'Other' diagnoses were: herpes labialis (n=4), hay fever (n=2), lupus (n=2), BCC (n=1), lichen planus (n=1), lichen simplex (n=1), melasma (n=1), migraine (n=1), pruritus (n=1), and tinea pedis (n=1).